Adolescent Immunization Update

Harlingen July 23, 2009

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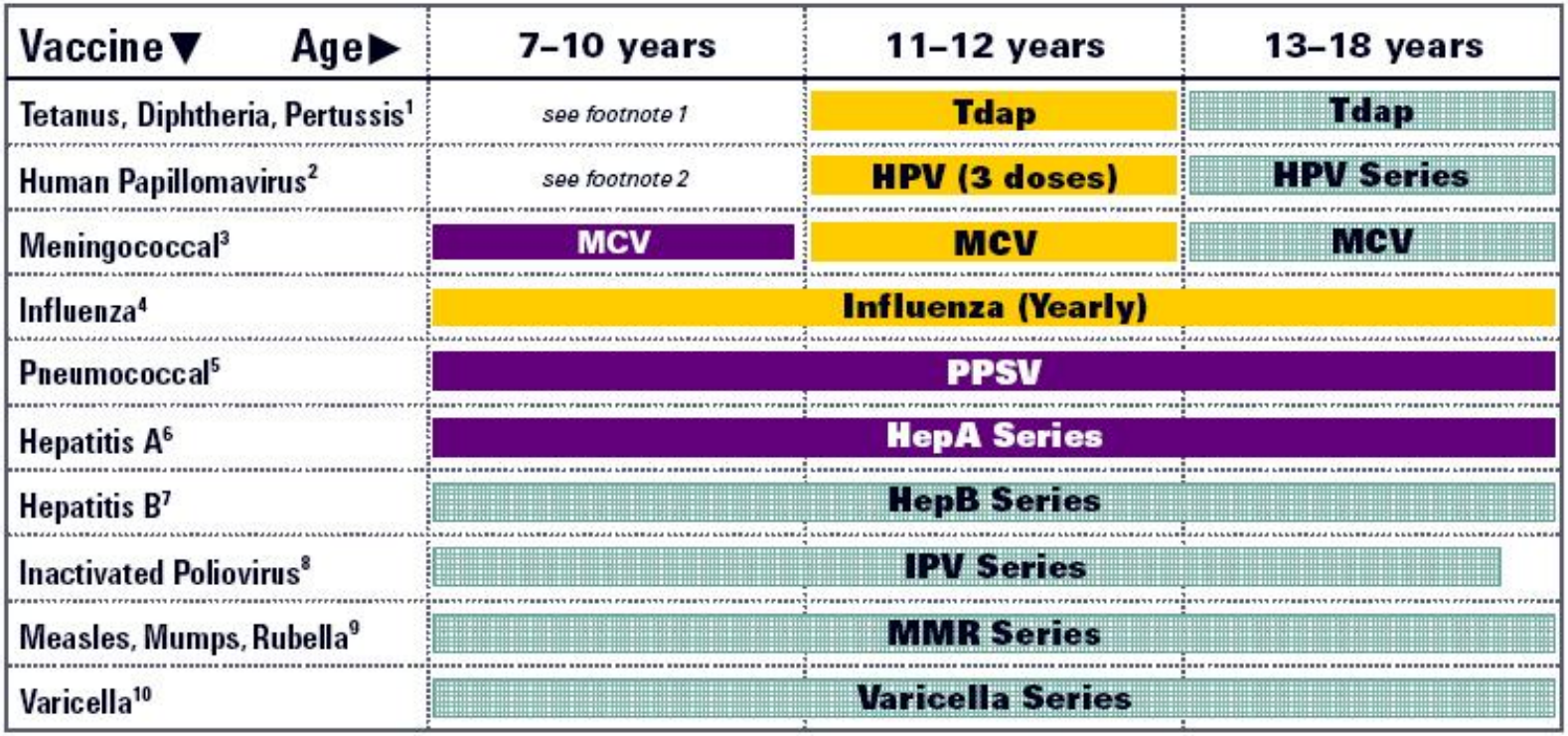
http://www.sanantonio.gov/health/

Objectives

- Review new recommendations for immunizing adolescents
- Discuss recent trends of infectious disease
- Examine vaccine prevention strategies, and review vaccine options for adolescents
- Discuss meningococcal, pertussis, HPV, and influenza vaccines
- Texas school requirements

Recommended Immunization Schedule for Persons Aged 7 Through 18 Years—United States • 2009

For those who fall behind or start late, see the schedule below and the catch-up schedule



This schedule indicates the recommended ages for routine administration of currently licensed vaccines, as of December 1, 2008, for children aged 7 through 18 years. Any dose not administered at the recommended age should be administered at a subsequent visit, when indicated and feasible. Licensed combination vaccines may be used whenever any component of the combination is indicated and other components are not contraindicated and if approved by the Food and Drug Administration for that dose of the series. Providers should consult the relevant Advisory Committee on Immunization Practices statement for detailed recommendations, including high-risk conditions: http://www.cdc.gov/vaccines/pubs/acip-list.htm. Clinically significant adverse events that follow immunization should be reported to the Vaccine Adverse Event Reporting System (VAERS). Guidance about how to obtain and complete a VAERS form is available at http://www.vaers.hhs.gov or by telephone, 800-822-7967.

Catch-up Immunization Schedule for Persons Aged 4 Months Through 18 Years Who Start Late or Who Are More Than 1 Month Behind—United States • 2009

The table below provides catch-up schedules and minimum intervals between doses for children whose vaccinations have been delayed. A vaccine series does not need to be restarted, regardless of the time that has elapsed between doses. Use the section appropriate for the child's age.

CATCH-UP SCHEDULE FOR PERSONS AGED 4 MONTHS THROUGH 6 YEARS					
Vaccine	**Minimum Age for Dose 1**	**Minimum Interval Between Doses**			
		Dose 1 to Dose 2	**Dose 2 to Dose 3**	**Dose 3 to Dose 4**	**Dose 4 to Dose 5**
Hepatitis B[1]	Birth	4 weeks	8 weeks (and at least 16 weeks after first dose)		
Rotavirus[2]	6 wks	4 weeks	4 weeks[2]		
Diphtheria, Tetanus, Pertussis[3]	6 wks	4 weeks	4 weeks	6 months	6 months[3]
Haemophilus influenzae type b[4]	6 wks	4 weeks if first dose administered at younger than 12 months of age 8 weeks (as final dose) if first dose administered at age 12-14 months No further doses needed if first dose administered at age 15 months or older	4 weeks[4] if current age is younger than 12 months 8 weeks (as final dose)[4] if current age is 12 months or older and second dose administered at younger than 15 months of age No further doses needed if previous dose administered at age 15 months or older	8 weeks (as final dose) This dose only necessary for children aged 12 months through 59 months who received 3 doses before age 12 months	
Pneumococcal[5]	6 wks	4 weeks if first dose administered at younger than 12 months of age 8 weeks (as final dose for healthy children) if first dose administered at age 12 months or older or current age 24 through 59 months No further doses needed for healthy children if first dose administered at age 24 months or older	4 weeks if current age is younger than 12 months 8 weeks (as final dose for healthy children) if current age is 12 months or older No further doses needed for healthy children if previous dose administered at age 24 months or older	8 weeks (as final dose) This dose only necessary for children aged 12 months through 59 months who received 3 doses before age 12 months or for high-risk children who received 3 doses at any age	
Inactivated Poliovirus[6]	6 wks	4 weeks	4 weeks	4 weeks[6]	
Measles, Mumps, Rubella[7]	12 mos	4 weeks			
Varicella[8]	12 mos	3 months			
Hepatitis A[9]	12 mos	6 months			
CATCH-UP SCHEDULE FOR PERSONS AGED 7 THROUGH 18 YEARS					
Tetanus, Diphtheria/ Tetanus, Diphtheria, Pertussis[10]	7 yrs[10]	4 weeks	4 weeks if first dose administered at younger than 12 months of age 6 months if first dose administered at age 12 months or older	6 months if first dose administered at younger than 12 months of age	
Human Papillomavirus[11]	9 yrs	Routine dosing intervals are recommended[11]			
Hepatitis A[9]	12 mos	6 months			
Hepatitis B[1]	Birth	4 weeks	8 weeks (and at least 16 weeks after first dose)		
Inactivated Poliovirus[6]	6 wks	4 weeks	4 weeks	4 weeks[6]	
Measles, Mumps, Rubella[7]	12 mos	4 weeks			
Varicella[8]	12 mos	3 months if the person is younger than 13 years of age 4 weeks if the person is aged 13 years or older			

Recent Trends Of Common Infectious Disease

Vaccine-Preventable Diseases and Deaths Remain at Unacceptable Levels in the US

Diseases	Estimated Annual Cases	Average Annual Deaths
Influenza[1]	31,000,000	38,000
Hepatitis B[2,3]	78,000	5000
Hepatitis A[2]	93,000	100
Varicella[4]	67,400	54
Pneumococcal disease[2]	175,000	5500
Meningococcal disease[2]	2500-3000	150
Pertussis[5]	800,000-3,300,000	7
HPV[6]	6,200,000	4000[7]

1. Weycker D, et al. *Vaccine*. 2005;23:1284. 2. CDC. *Pink Book*. 8th Edition. 2005. 3. American Liver Foundation. Hepatitis and Liver Disease in the United States. Available at: http://www.liverfoundation.org. Accessed April 2005. 4. CDC. *MMWR*. 2005; 54(11);272 . 5. Cherry JD. *Pediatrics*. 2005;115:1422. 6. CDC. Genital HPV Infection – CDC Fact Sheet. Available at: www.cdc.gov/std/HPV/STDFact-HPV.htm. Accessed June 2005. 7. Estimated deaths from cervical cancer, for which HPV infection is a risk factor

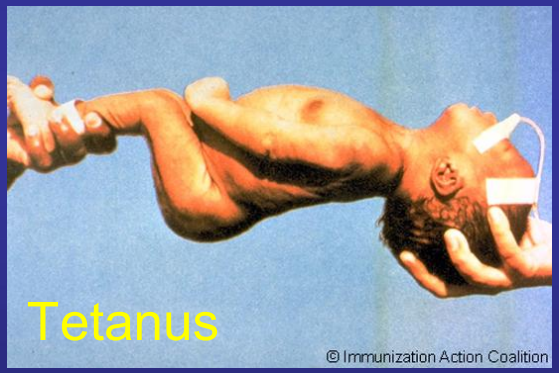
Vaccine Preventable Diseases

Rubella

Measles

Diphtheria

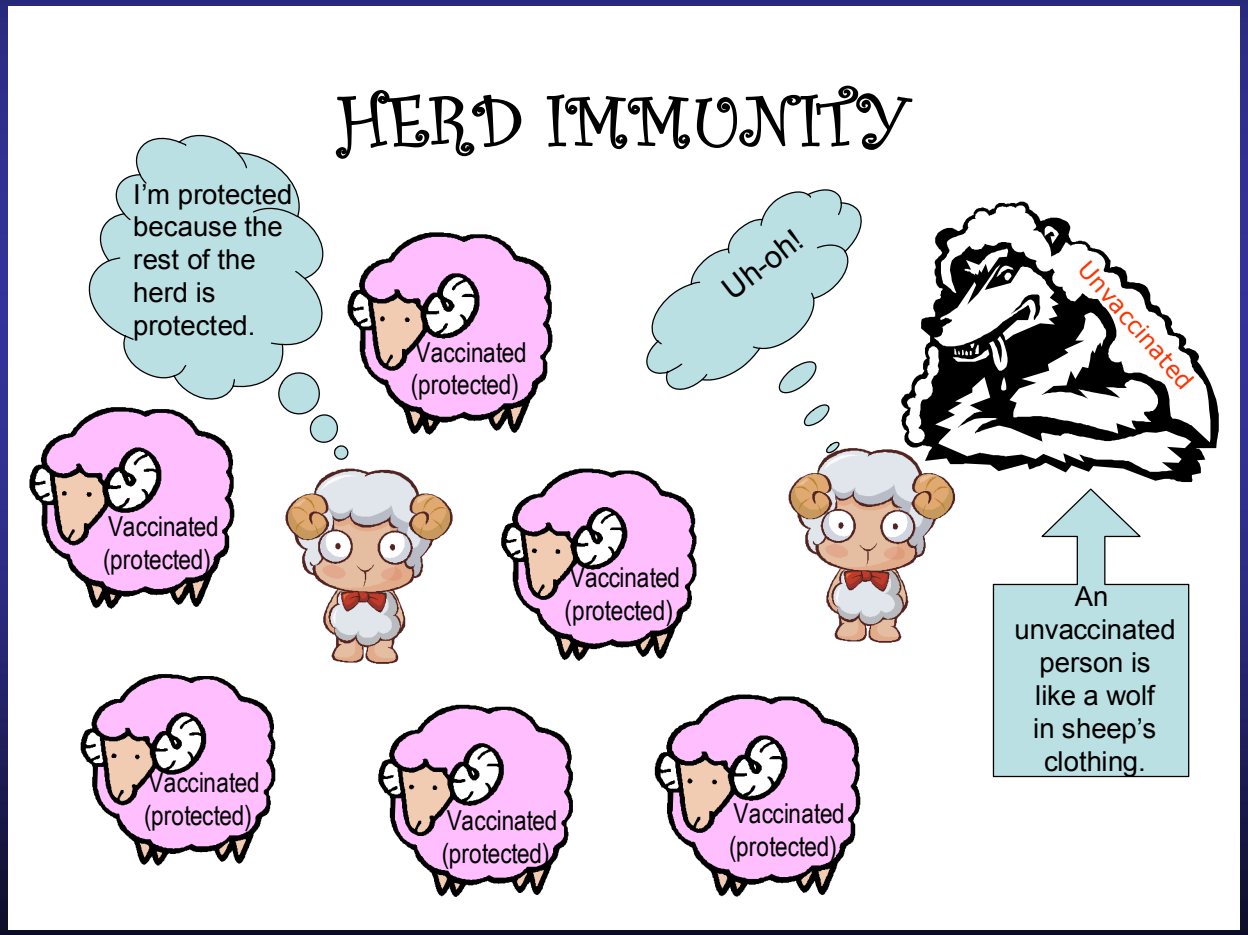
Invasive Pneumococcal Disease



Varicella

Pertussis

The Rationale for Emphasizing Adolescent Immunization



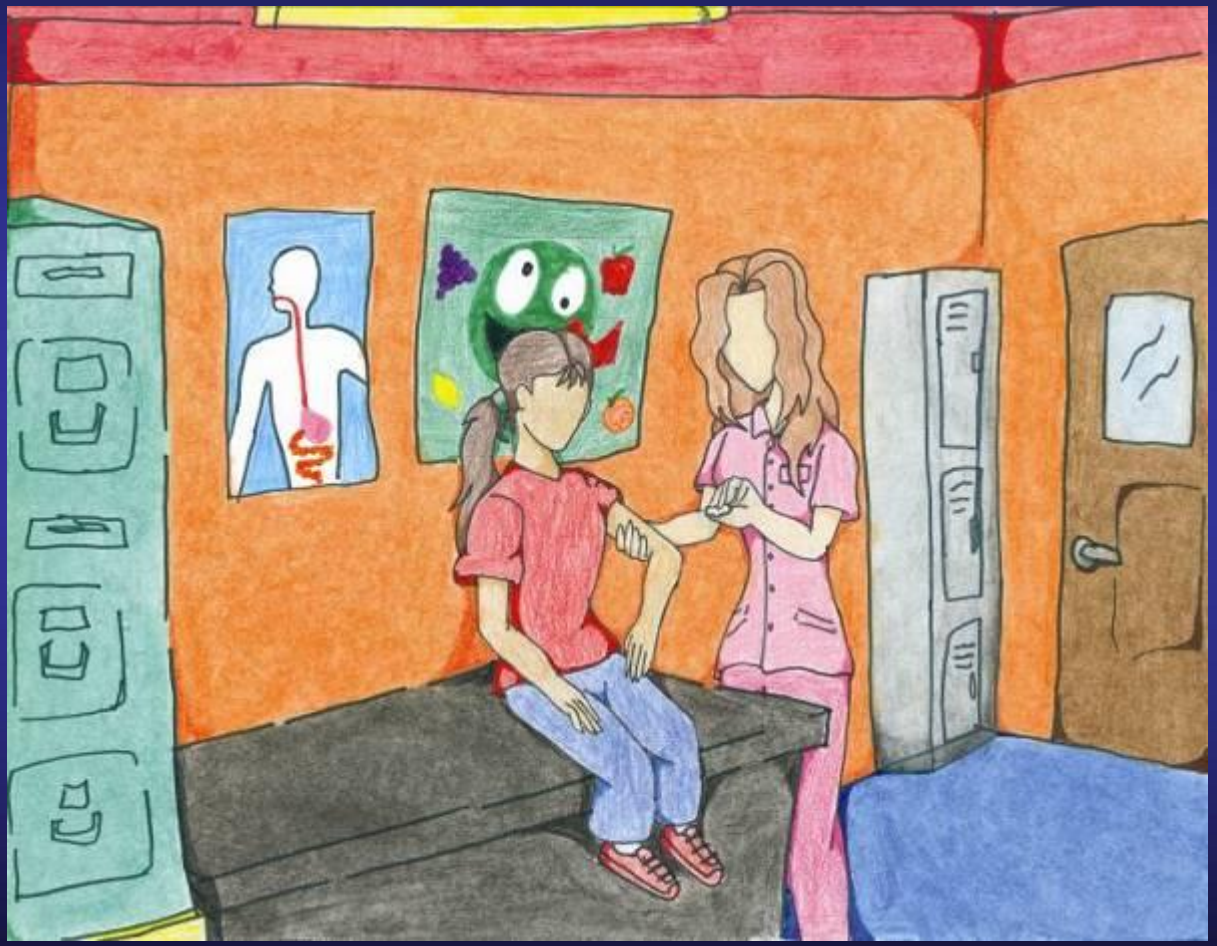
Adolescent immunization:

- protects during a period of increased risk
- can prevent lifelong complications
- can increase herd immunity

Social Barriers to Adolescent Immunization

- Abandonment, Homeless
- Abuse, neglect, violence
- Divorce
- Death of parent(s)
- Incarceration of parent(s)
- Juvenile justice system
- Unemployment
- Racism
- Family conflict
- High cost of housing
- Myths, Misperceptions
- Foster care
- Disasters- e.g. hurricane Katrina, 911
- Military Deployment
- Mental illness
- Substance abuse
- Illness of parent(s) – e.g. AIDS
- Disability (child OR parent)
- Relocation to another city
- Distractions

Vaccine Strategies



"Routine Immunization Visits to the Doctor"
Jasmine Mendoza, grade 12,
2008 Immunization Calendar Contest

Strategies for Success

- Educate parents and adolescents about ACIP-recommended vaccines
- Remind families of Texas school immunization requirements
- Encourage regular well visits for all adolescents
- Partner with local communities and institutions (including schools and colleges)
- Become a Vaccines for Children (VFC) provider
- Offer extra services to reach underserved populations (eg, taxi vouchers, home visits)

Strategies for Success *(cont'd)*

- Reduce missed opportunities to vaccinate
- Use standing orders
- Review and update office immunization practices; evaluate your immunization rates
- Motivate staff to become vaccine advocates

Reducing Missed Opportunities

- Regard every visit as a potential vaccination opportunity
  - Check immunization status at each contact and immunize if needed and not contraindicated
- Recognize valid contraindications/precautions
- Use chart reminders
- Give all needed vaccines at a single visit
- Be familiar with special vaccination needs of patients with medical problems

Standing Orders

- Allows nurses and pharmacists to vaccinate without individual patient orders
- Specifies indications, contraindications
- Saves health-care providers time and effort
- Strong evidence that they work
- Examples available at www.immunize.org

Review and update office immunization practices

- Ensure proper storage and handling of all vaccines
- Post and follow appropriate immunization schedules, including the CDC catch-up schedule
- Establish one way to record all immunizations; ensure that record is available at all visits
- Participate in immunization registries across all ages
- Use reminders (eg, mail, phone) to get patients to make and keep appointments

Evaluate the success of your immunization efforts

- Determine your practice's adolescent immunization rate at least every 1-2 years
  - Health-care providers tend to overestimate their practice's vaccination rate
- Contact your public health department
  - Many state and local departments will conduct a free, detailed evaluation
- Participate in the Vaccines for Children (VFC) program
  - Quality Assurance Review (QAR)
  - Assessment, Feedback, Incentives, Exchange (AFIX)

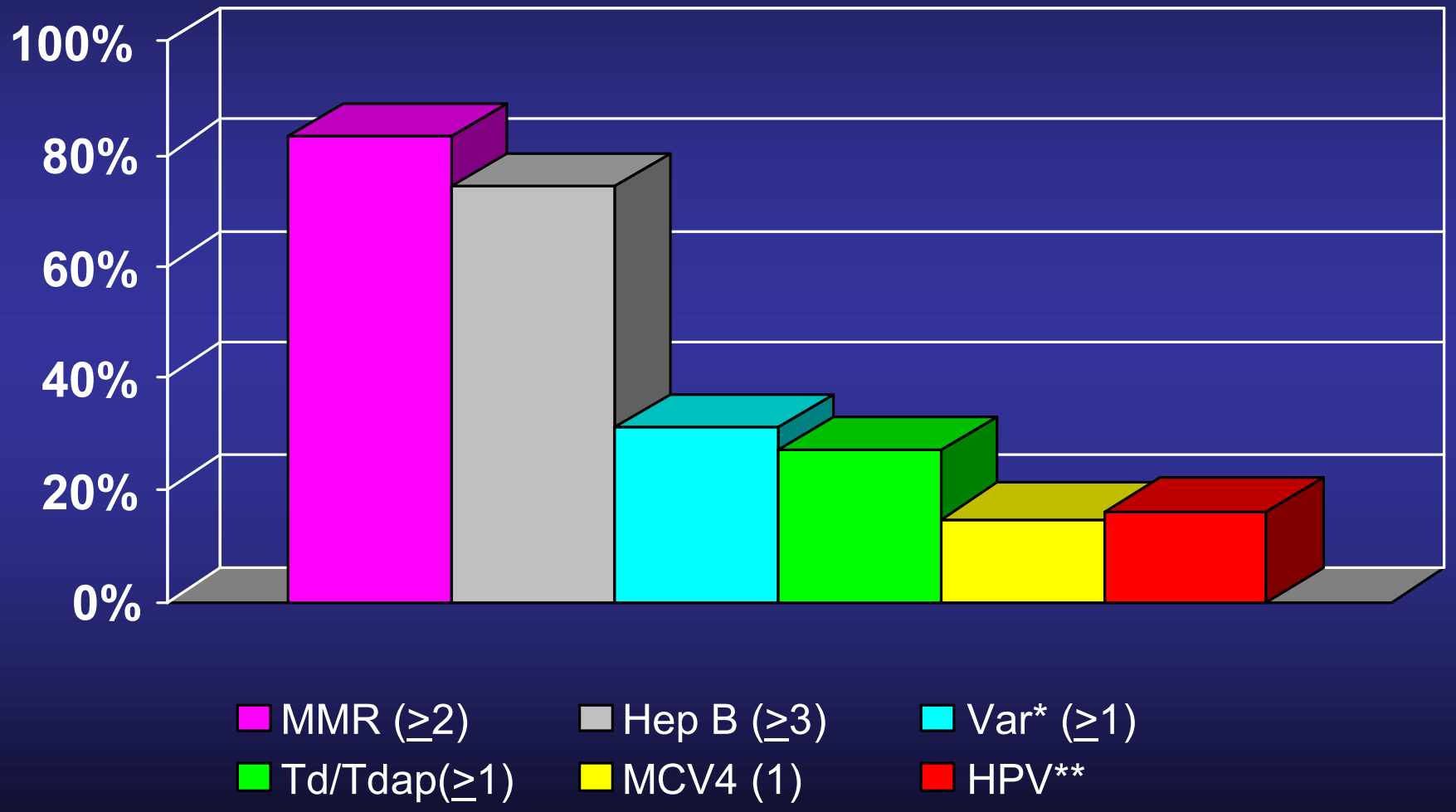
Motivate your staff to become vaccine advocates

- Increase awareness of adolescent immunization with staff newsletters or staff meetings
- Share practice goals and Health Plan Employer Data and Information Set (HEDIS) compliance data
- Use training programs sponsored by the CDC, local health departments, specialty societies, and immunization groups
- Review charts to identify providers who may need additional education
- Recognize staff members who achieve immunization goals (eg, gift certificates, awards)

Your recommendation makes a BIG difference!

Nichol KL et al. *J Gen Intern Med.* 1996:11:673-677.

Vaccination Rates in Adolescents 13-17 Years of Age Bexar County-2008



* Coverage among teens without a reported history of disease
** Rates among females only
*** Immunization Registry System (SAIRS) – database reflects a large subset of Bexar population

Meningococcal Disease

Meningococcal Disease Is Challenging

- Persistent global health problem[1]
- Causes endemic and epidemic disease[1]
- Early disease can be easily misdiagnosed[1]
- May present with variable clinical manifestations[1]
- Signs and symptoms may be hard to distinguish from common viral illness
- Displays rapid onset and progression[1]
- High morbidity and mortality, despite effective therapy[1-3]

- Granoff DM, et al. In: *Vaccines*. 2004:959;
- **2**. Rosenstein NE, et al. *N Engl J Med*. 2001;344:1378;
- **3**. Jodar L, et al. *Lancet*. 2002;359:1499.

Neisseria meningitidis

- Gram-negative aerobic diplococcus with polysaccharide capsule[1]
- Typically carried asymptomatically in the nasopharynx[1]
- Transmitted via aerosol, secretions, person-to-person contact[1]
- May penetrate the mucosa to the bloodstream, leading to systemic meningococcal disease[1]
- In nonepidemic periods, ~10% of healthy individuals are colonized[1]
- Up to 34% of college freshmen are colonized[2]

1. Granoff DM, et al. In: *Vaccines*. 2004:959;
2. **2**. Neal KR, et al. *BMJ*. 2000;320:846.

Photo courtesy of Eye of Science/Photo Researchers, Inc.

Most Common Clinical Presentations of Meningococcal Disease

Meningococcemia

- Rash
- Vascular damage
- Disseminated intravascular coagulation
- Multi-organ failure
- Shock
- Death can occur within 24 hours
- ~5% to 20% of cases: up to 40% fatality rate

Meningitis

- Fever and headache (flu-like symptoms)
- Stiff neck
- Nausea
- Altered mental status
- Seizures
- ~50% of cases:

3%–10% fatality rate

1. Rosenstein NE, et al. *N Engl J Med.* 2001;344:1378.

Serious Outcomes of Meningococcal Disease

Meningococcemia

- Skin scars from necrosis
- Limb loss from gangrene
- Renal failure
- Septic arthritis
- Pneumonia
- Epiglottitis
- Pericarditis
- Up to 40% fatality rate

Meningitis

- Spastic quadriplegia
- Hearing loss
- Cerebral infarction
- Cortical venous thrombophlebitis
- Cerebral edema
- Cranial nerve palsies
- Mental retardation
- Hemiparesis
- 3%–10% fatality rate

1. Fellick JM, et al. *Arch Dis Child*. 2001;85:6; **2**. Erickson L, De Wals P. *Clin Infect Dis*. 1998;26:1159;
3. Erickson L, et al. *Clin Infect Dis*. 2001;33:737; **4**. Munford RS. In: *Harrison's Principles of Internal Medicine*. 2001:927.

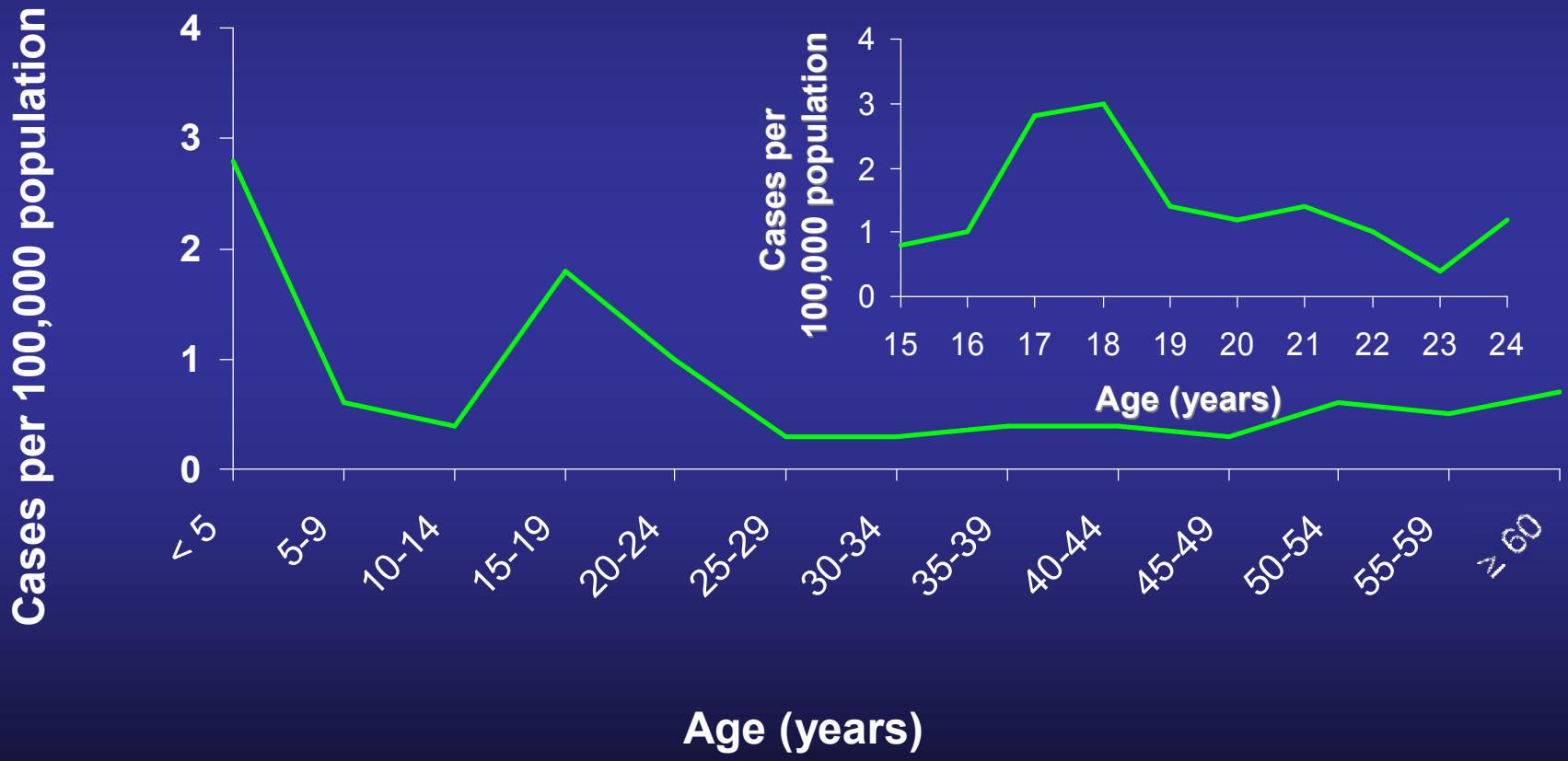
N meningitidis Infection

Courtesy of R Rudoy, MD, Honolulu, Hawaii, USA

Courtesy of R Rudoy, MD, Honolulu, Hawaii, USA

Reprinted with permission from Schoeller T, Schmutzhard E. *N Engl J Med.* 2001;34:1372.

A Peak of Meningococcal Disease Incidence Occurs in 15- to 19-Year-Olds*



*Average annual incidence rate by age in Maryland, 1992–1999

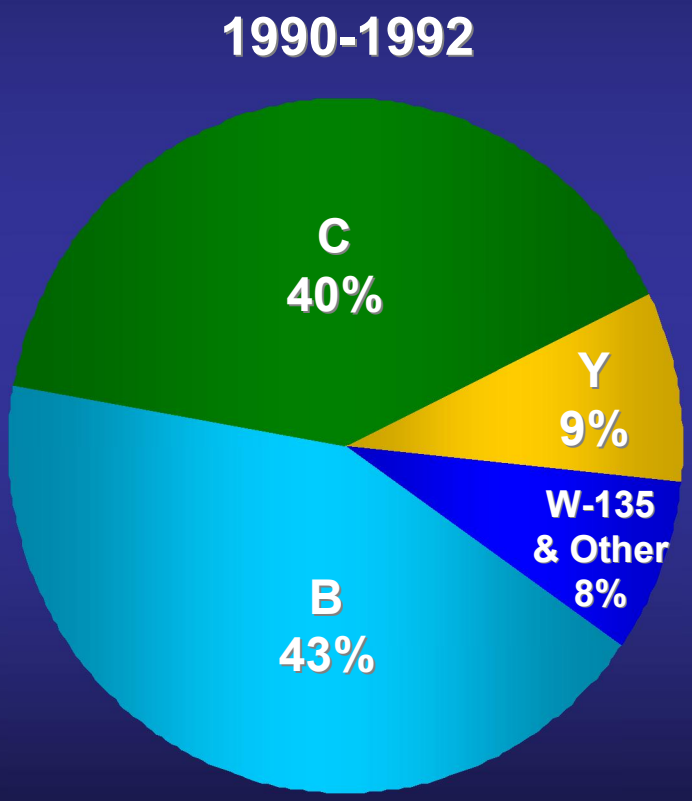
1. Harrison LH, et al. *JAMA*. 2001;286:694.

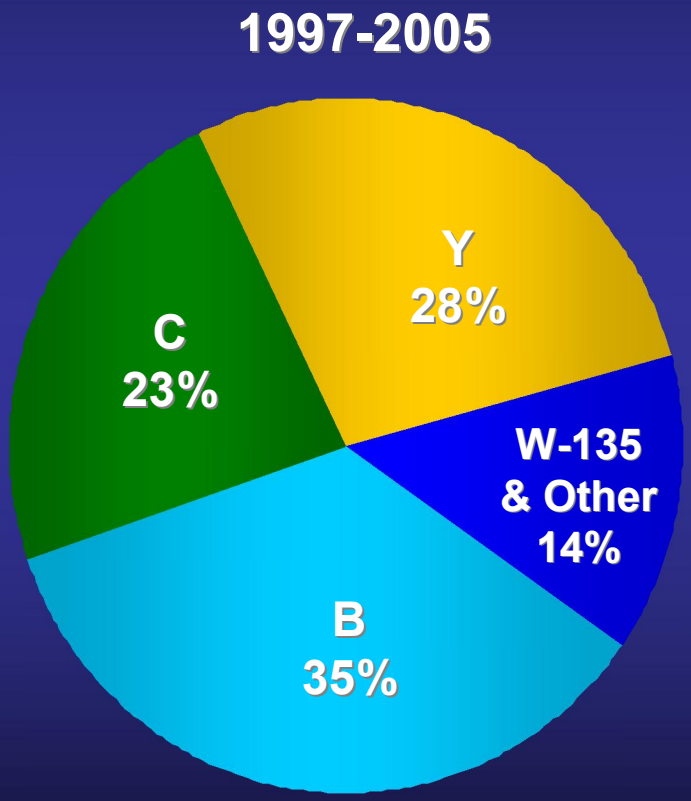
Clinically Significant *N meningitidis* Serogroups

Serogroup	Characteristics
A	• Leading cause of epidemic meningitis worldwide • Most prevalent serogroup in Africa and China • Rare in Europe and the Americas
B	• A major cause of endemic disease in Europe and the Americas • No vaccine commercially available in US
C	• A major cause of endemic disease in Europe, North America • Multiple outbreaks in schools/community
Y	• Associated with pneumonia • Increasing problem in the United States, affecting all age groups
W-135	• Small percentage of infections worldwide • Recent outbreaks associated with Hajj pilgrims

1. Granoff DM, et al. In: *Vaccines*. 2004:959.

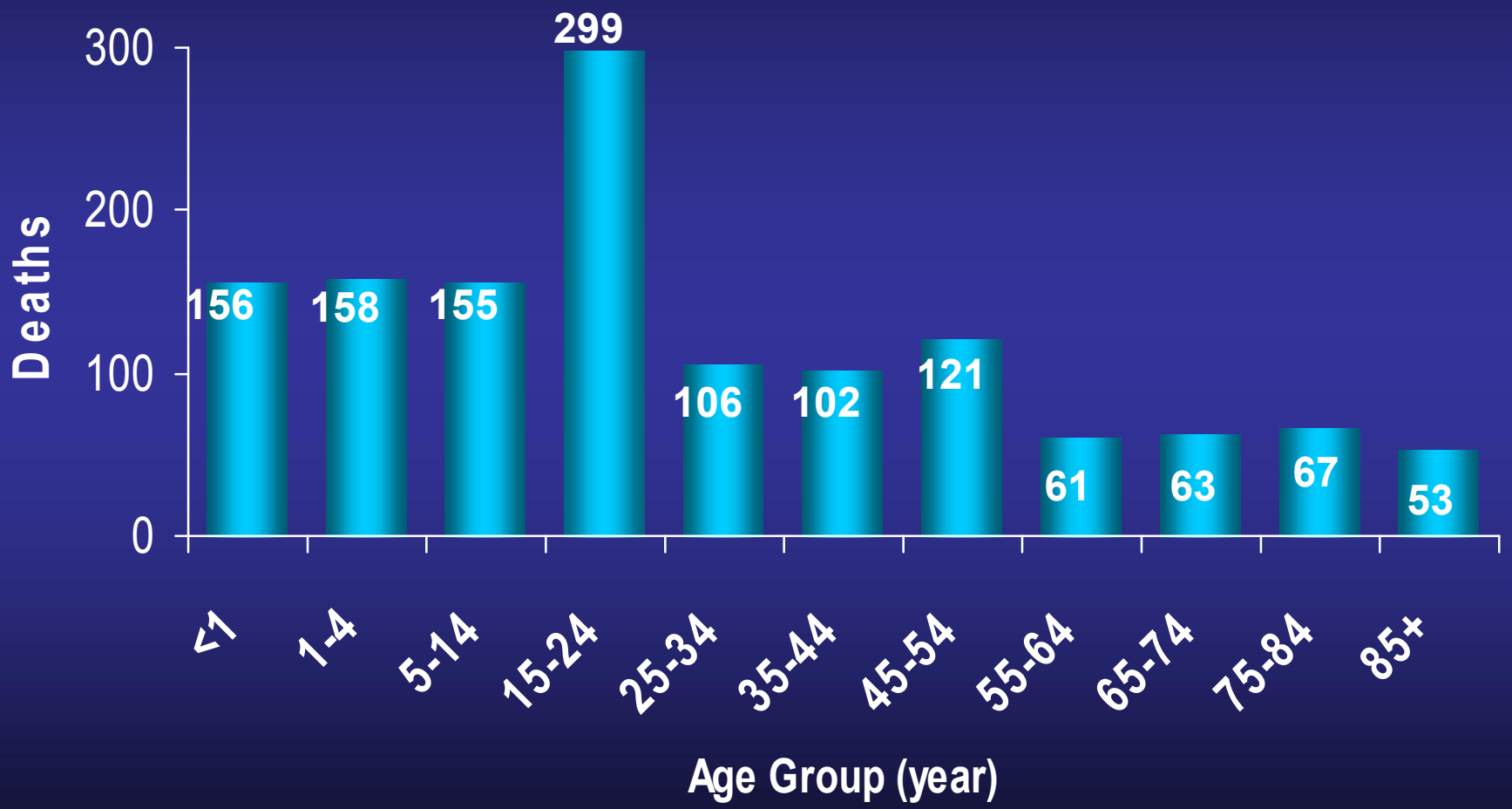
N meningitidis Serogroup Distributions Have Changed in the US (All Age Groups)





1. Active Bacterial Core Surveillance (ABCs) Report, Emerging Infections Program Network, *Neisseria meningitidis*, 1997–2005, available at http://www.cdc.gov/ncidod/dbmd/abcs/survreports.htm; Emerging Infections Program Network, data on file.

Age-Specific Fatalities From Meningococcal Disease in the US, 1997–2002



1. Centers for Disease Control and Prevention (CDC). *National Vital Statistics Reports*. 1999;47(19):52; **2**. CDC. *National Vital Statistics Reports*. 2000;48(11):51; **3**. CDC *National Vital Statistics Reports*. 2001;49(8):27; **4**. CDC. *National Vital Statistics Reports*. 2002;50(15):28; **5**. CDC. *National Vital Statistics Reports*. 2003;52(3):30; **6**. CDC. *National Vital Statistics Reports*. 2004;53(5):29.

Meningococcal Vaccines

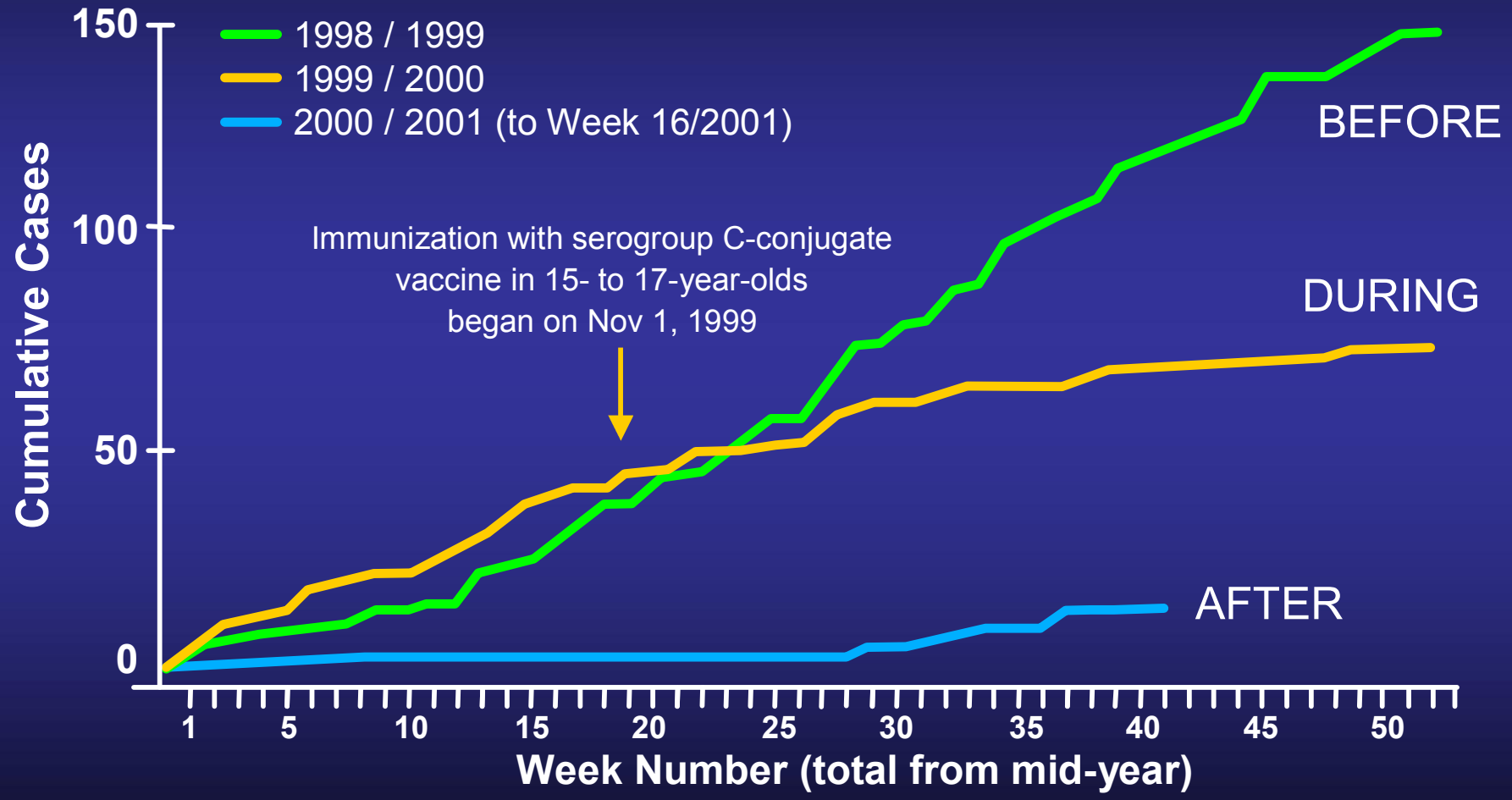
- Polysaccharide vaccine
  - Meningococcal capsular polysaccharides
    - A/C/Y/W-135:
      Menomune®–A/C/Y/W-135, Meningococcal Polysaccharide Vaccine, Groups A, C, Y and W-135 Combined
- Conjugate vaccines
  - Meningococcal capsular polysaccharides covalently linked to carrier proteins
    - C-conjugate:
      Used in UK and most of Europe, Canada, Brazil, and Australia
    - A/C/Y/W-135-conjugate:
      Menactra®, Meningococcal (Groups A, C, Y and W-135) Polysaccharide Diphtheria Toxoid Conjugate Vaccine

Advantages of Successful Conjugate Vaccines

Property	Polysaccharide	Conjugate
B-cell–dependent immune response	Yes	Yes
T-cell–dependent immune response	No	Yes
Immune memory	No	Yes
Lack of hyporesponsiveness	No	Yes
Booster effect	No	Yes
Long-term protection	No	Yes
Reduction of carriage	No	Yes
Herd protection	No	Yes

Adapted from Granoff DM, et al. In: *Vaccines*. 2004: 959.

Serogroup C Disease Decreased Dramatically After C-Conjugate Vaccination in the UK



Vaccination was offered to all UK citizens ≤18 years of age.

1. Health Protection Agency Web site. Available at: www.hpa.org.uk/infections/topics_az/meningo/graph_meni-groupC.htm. Accessed May 2004.

Herd Protection: Serogroup C Attack Rates in Unvaccinated Children Before and After UK Program

Cohort	July 1998–June 1999 Attack Rate/100,000*	July 2001–June 2002 Attack Rate/100,000†	% Reduction in Unvaccinated
Infants	7.49	1.56	79
Toddlers	6.82	2.05	70
Preschool	3.94	1.20	70
School Years, 1–6	1.94	1.00	48
School Years, 7–10	5.54	1.11	80
Older Adolescents	5.28	1.79	66

*Before universal UK vaccination program
†After universal UK vaccination program
1. Ramsay ME, et al. *BMJ*. 2003;326:365.

Expected Attributes of Quadrivalent Meningococcal ***Conjugate*** in the US

- Broad serogroup coverage (A, C, Y and W-135)
  - The majority of adolescent cases are covered by the vaccine
- High-quality immune response in adolescents and young adults
  - Immunological memory induced by T cells
- Herd protection through nasopharyngeal carriage reductions

Reduction of Serogroup C Disease in the UK After Nationwide Immunization With C-Conjugate Vaccine

Age (years)	1998 / 1999	2000 / 2001	Reduction (%)
< 1	81	14	83
1-2	119	25	81
3-4	67	14	80
5-9	75	27	64
10-14	74	8	89
15-17	**121**	**15**	**88**
Total	537	103	81

1. Miller E, et al. *Vaccine.* 2002;20:S58.

ACIP Recommendations for Use of Meningococcal Vaccines

- Routine immunization of adolescents with MCV-4
  - Young adolescents aged 11–12 years (during the pre-adolescent visit)[1]
  - Before high school entry (at ~15 years of age) if not previously vaccinated[1]
- Routine vaccination of other populations at increased risk
  - Incoming college freshmen living in dormitories[1]
  - Microbiologists who are routinely exposed to isolates[1] of *Neisseria meningitidis* [1]
  - Military recruits[1]
  - Persons who travel to, or reside in, countries in which *N meningitidis* is hyperendemic or epidemic[1]
  - Complement-deficient and asplenic patients[1]
- The ACIP recommendations were also endorsed by the American Academy of Pediatrics (AAP) and the American Academy of Family Physicians (AAFP)[2]

1. CDC. *MMWR Morb Mortal Wkly Rep*. 2005;54(RR-7):13; **2**. CDC. *MMWR Morb Mortal Wkly Rep*. 2006;54(52):Q1-Q4.

Predicted Reduction of Meningococcal Disease by Different Immunization Programs in the US*

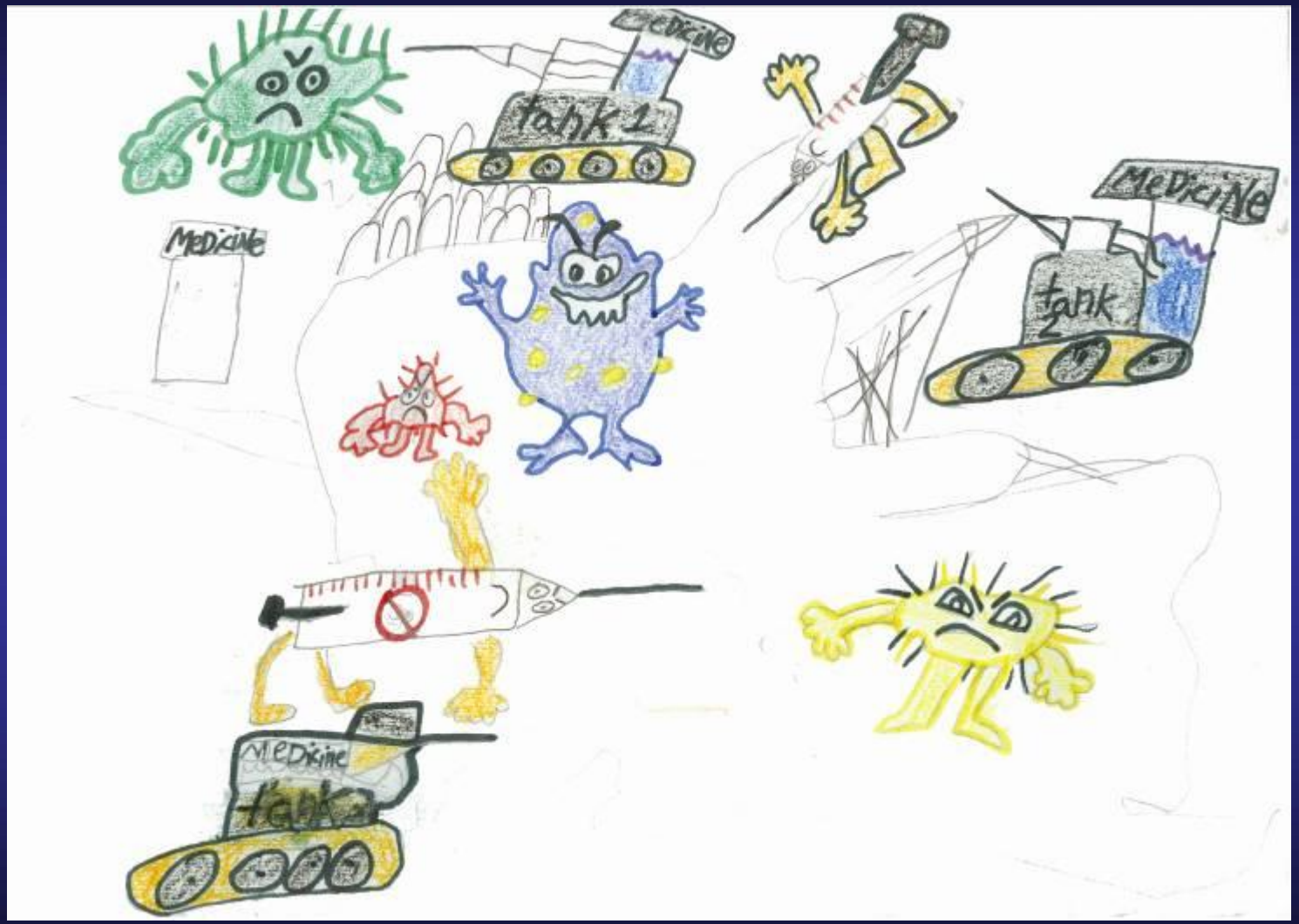
Estimated reduction of meningococcal disease 10 years after large-scale immunization programs with a C + Y conjugate vaccine

Strategy	Disease Cases Remaining	% Reduction	Deaths Remaining	% Reduction
No vaccination / baseline	1621	–	130	–
Infant	1175	28	97	25
Toddler	1239	24	98	25
Adolescent	1284	21	84	35
College	1565	3	122	6
Inf+Ado+College	814	50	47	64
Tod+Ado+College	878	46	48	63

*Analysis does not factor in potential benefits of herd protection

1. Lingappa JR, et al. *Vaccine*. 2001;19:4566.

Pertussis Disease



"Germs and Medicine Battle", Diego Tejeda, Grade 2, 2008 Immunization Calendar Contest

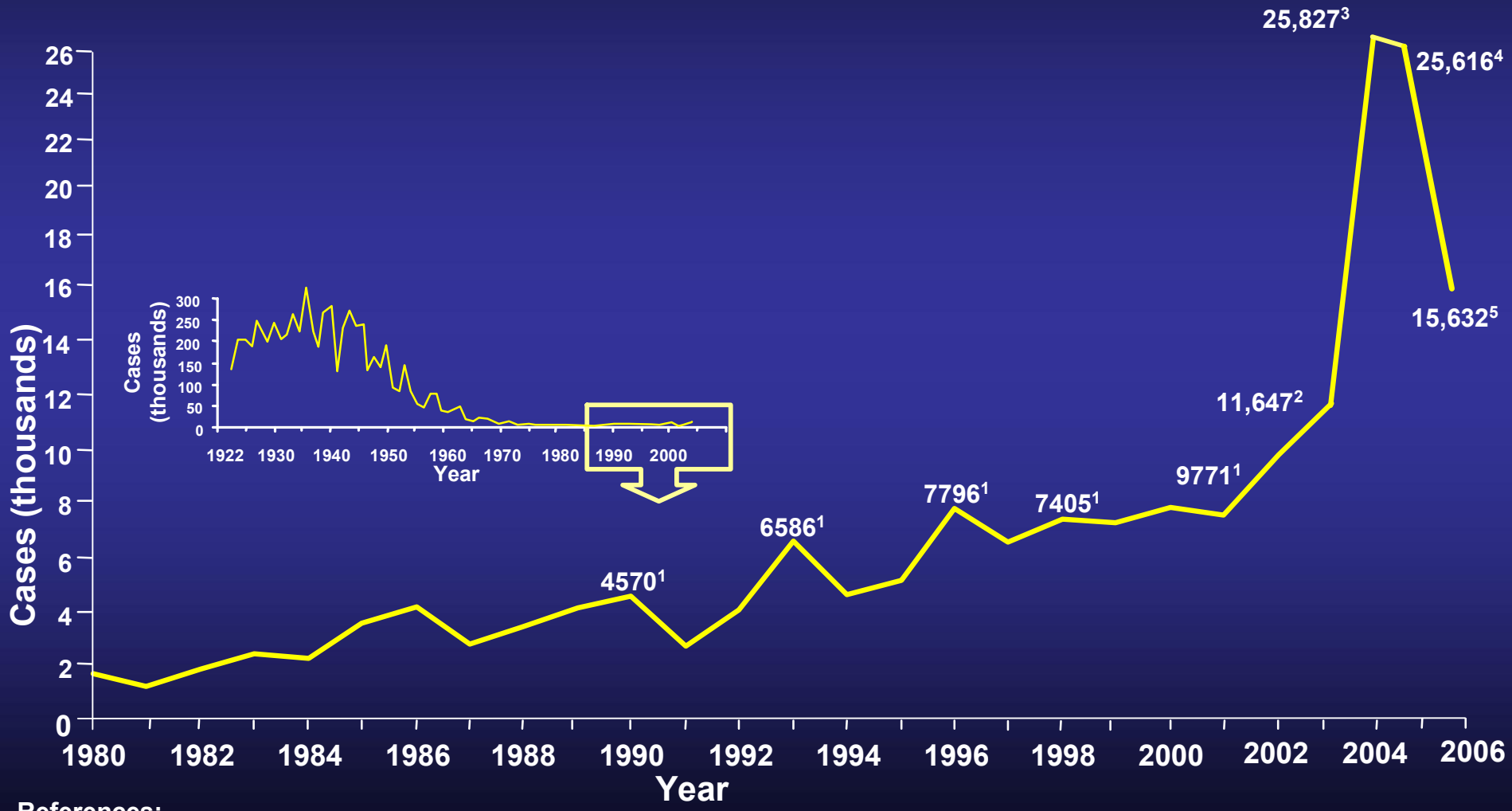
What Is Pertussis?

- Acute respiratory tract infection
- *Bordetella pertussis* (gram-negative aerobic bacillus)
- Highly communicable
- Morbidity in all ages, particularly infants[1]
- Causes prolonged coughing
- Difficult to diagnose

Credit: Dr. Gary Gaugler/Photo Researchers, Inc

Reference:
1. Scott PT, et al. *Am Fam Physician.* 1997;56:1121-1128.

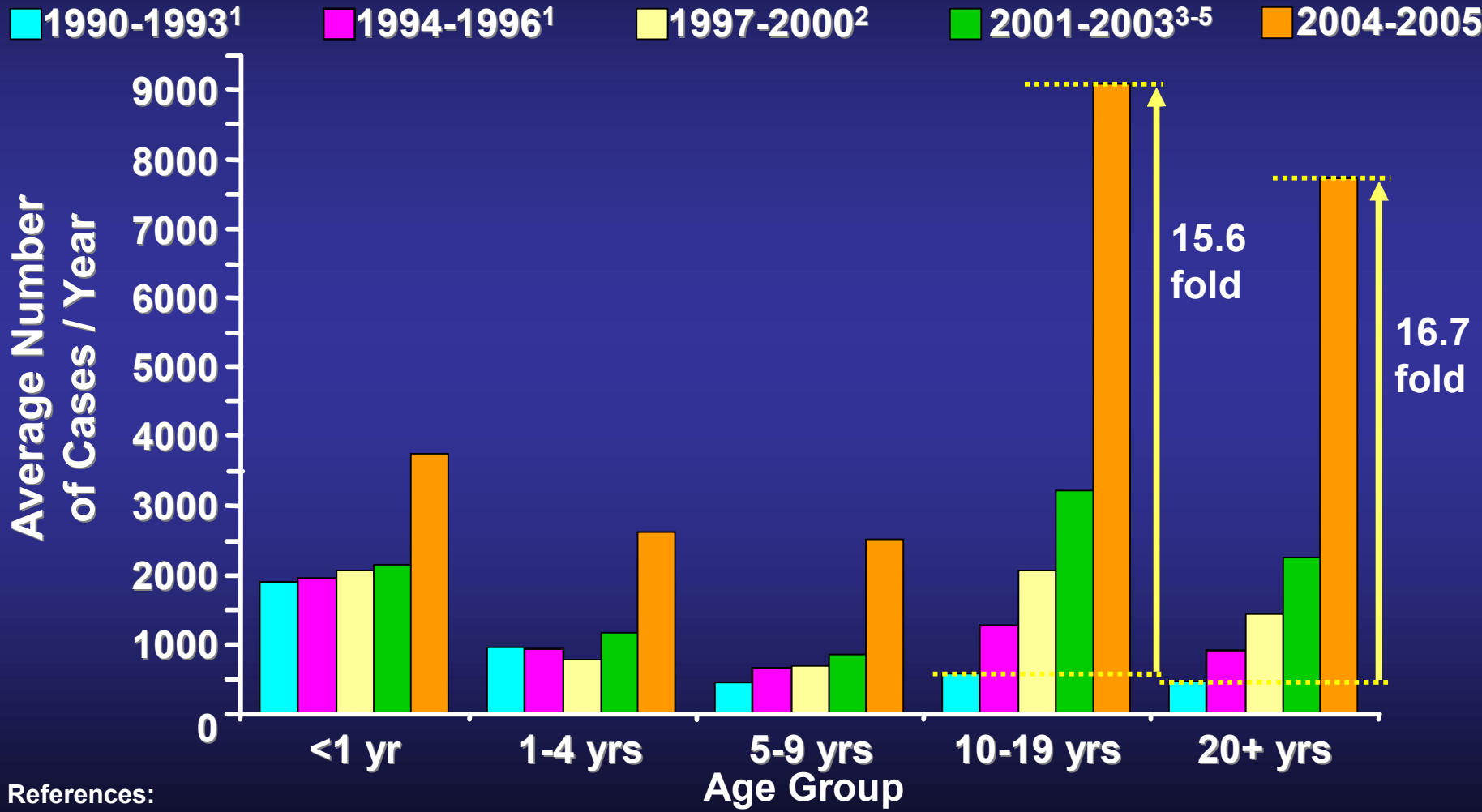
Reported Pertussis Cases in the United States (1922-2006)



References:

1. Centers for Disease Control and Prevention (CDC). *MMWR*. 2004;51(53):74. **2.** CDC. *MMWR*. 2004;53(30):693. **3.** CDC. *MMWR*. 2005;54(31):777. **4.** CDC. *MMWR*. 2006;55(32):890. **5.** CDC. *MMWR*. 2007;56(33):851, 860.

Dramatic Growth in Reports of Adult and Adolescent Pertussis



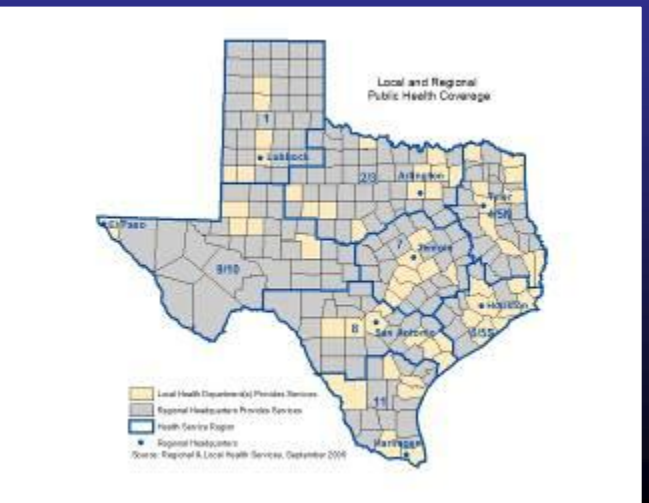
References:

1. Güriş D, et al. *Clin Infect Dis*. 1999;28:1230-1237. **2.** CDC. *MMWR*. 2002;51(4):73-76. **3.** CDC. *MMWR*. 2003;50(53):9. **4.** CDC. *MMWR*. 2004;51(53):23. **5.** CDC. *MMWR*. 2005;54(31):777. **6.** National Center for Immunization and Respiratory Diseases, CDC. Pertussis Surveillance Reports for 2004 & 2005.

Reported Cases of Pertussis in 2007

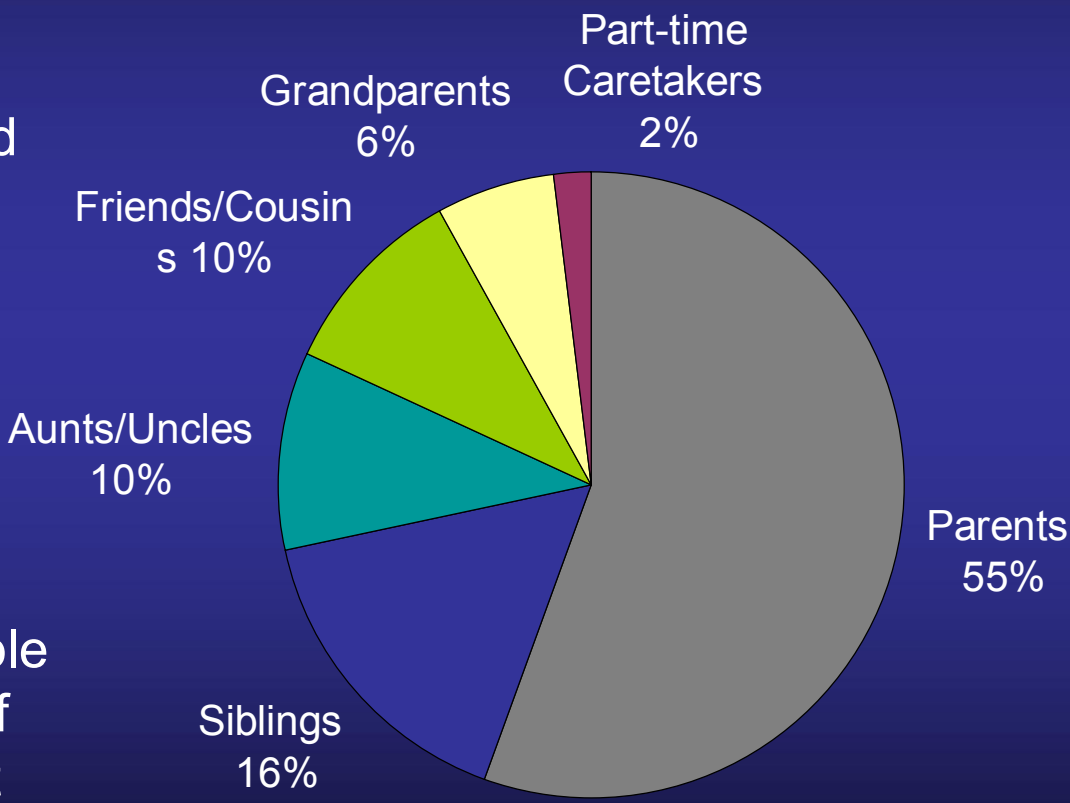
Texas Health Service Regions 1,051 cases total

- 435 cases: North Texas (Region 1,2,3)
- 274 cases: Central (Region 7)
- 146 cases: East Texas (Region 4,5,6)
- 124 cases: South Central (Region 8)
- 50 cases: South Texas (Region 11)
- 22 cases: West Texas (Region 9,10)



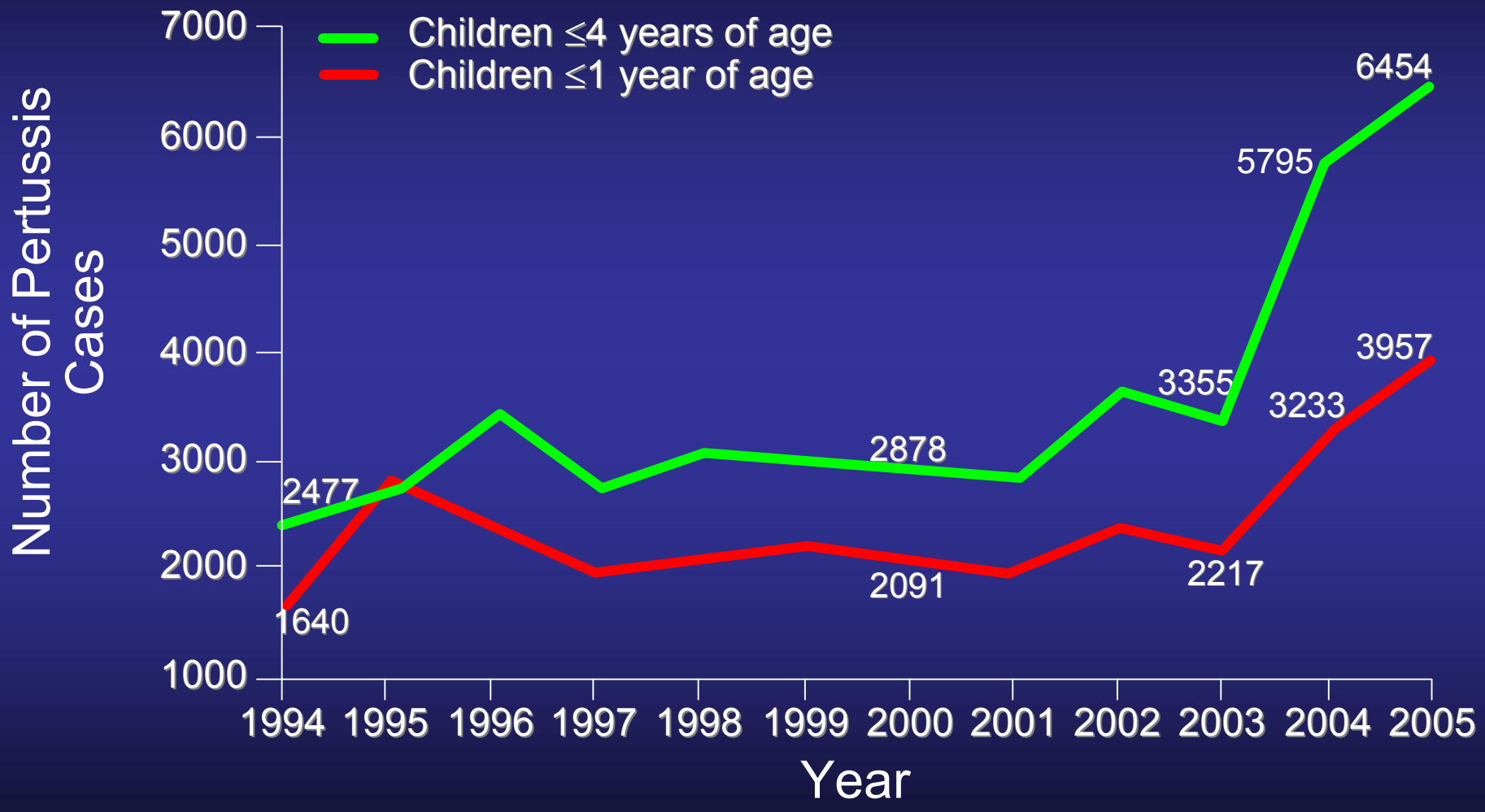
Infant Pertussis: Who Is the Source?

- Hospital-based, prospective multicenter study conducted in France, Germany, Canada, and the United States
- Study population included 95 infants ≤6 months of age with laboratory-confirmed pertussis and 404 household and close non-household contacts
- Household members responsible for 76%-83% of transmission of pertussis to this high-risk infant group



Reference:
1. Wendelboe AM, et al. *Pediatr Infect Dis J*. 2007;26:293-299.

Pertussis in Young Children and Infants



References:

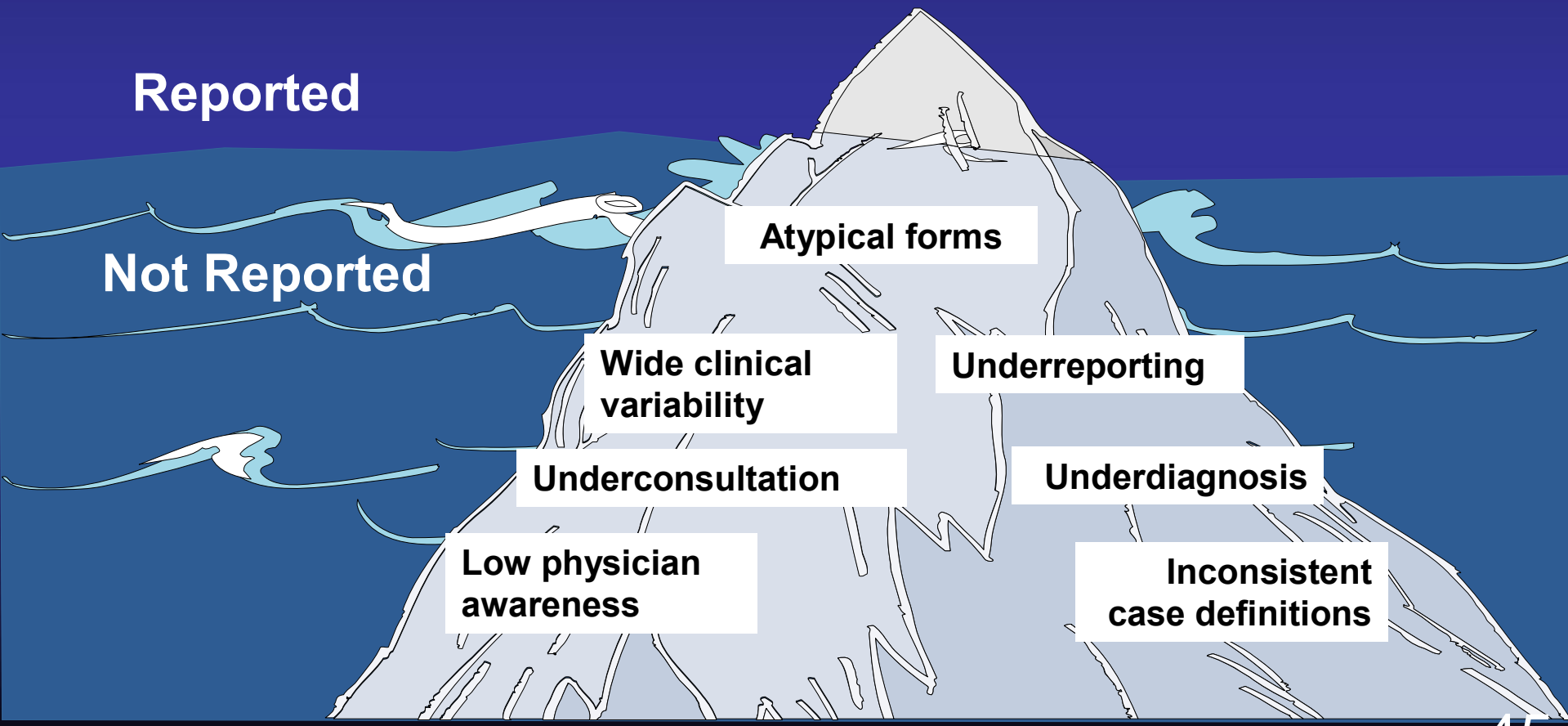
1. CDC. Summary of Notifiable Diseases, reports from 1994-2004.

2. CDC. Pertussis Surveillance Reports, 9/05/02-10/4/06.

3. CDC. Pertussis—United States, 2001-2003. *MMWR*. 2005;54(50):1283-1286.

Reported Pertussis Cases Are the Tip of the Iceberg

- Nationwide, a small percentage of pertussis cases are actually reported
- Underreporting may be greatest among adults and adolescents

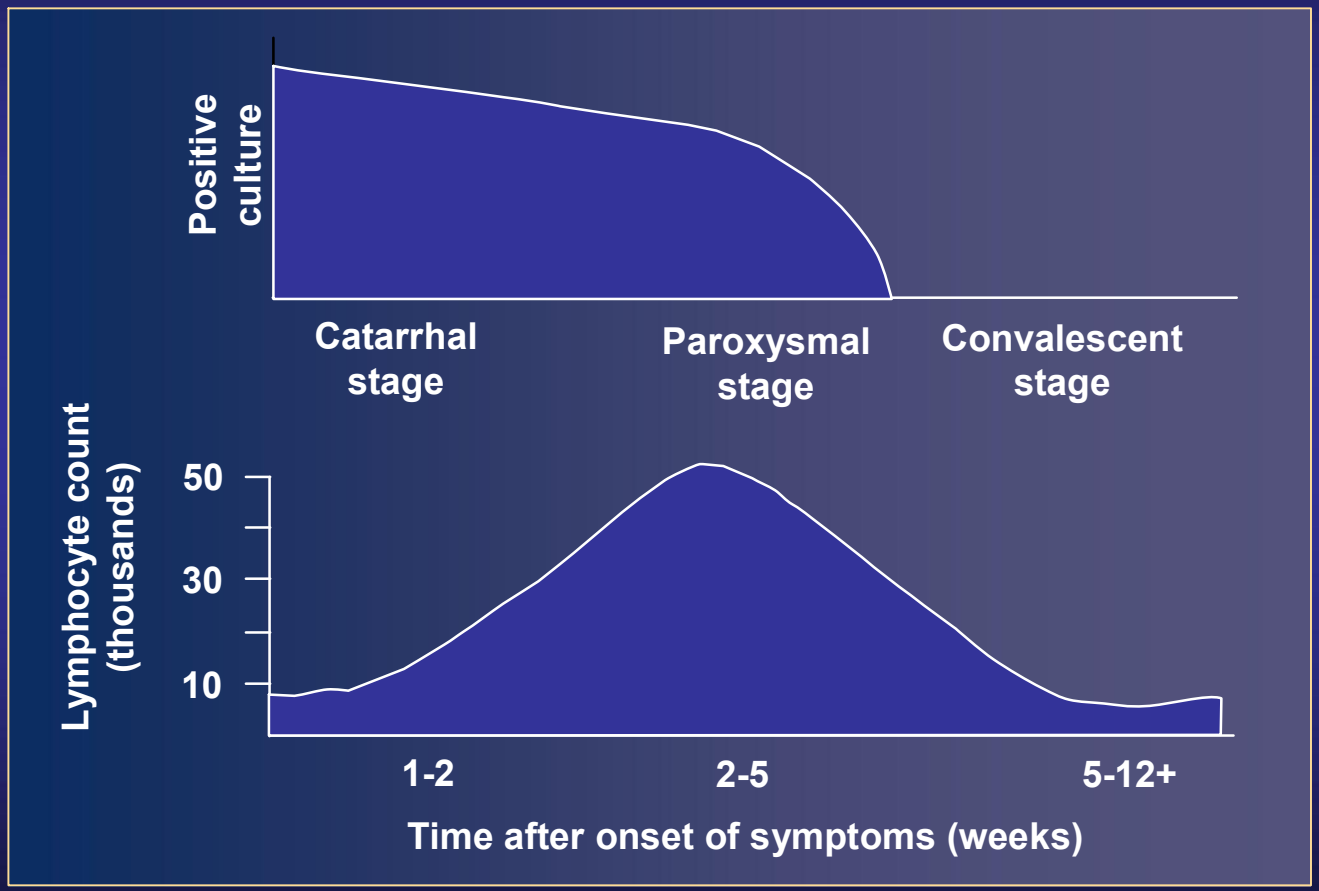


Common Clinical Manifestations of Adult-Adolescent Pertussis

- Cough ≥3 weeks in 97%,
  ≥9 weeks in 52%
- Paroxysms ≥3 weeks in 73%
- Whoop in 69%
- Post-tussive emesis in 65%
- Teens missed average 5 days of school;
  adults missed average 7 days of work
- Average 14 days of disrupted sleep

Reference:
1. De Serres G, et al. *J Infect Dis*. 2000;182:174-179.

Diagnostic Laboratory Findings in Pertussis

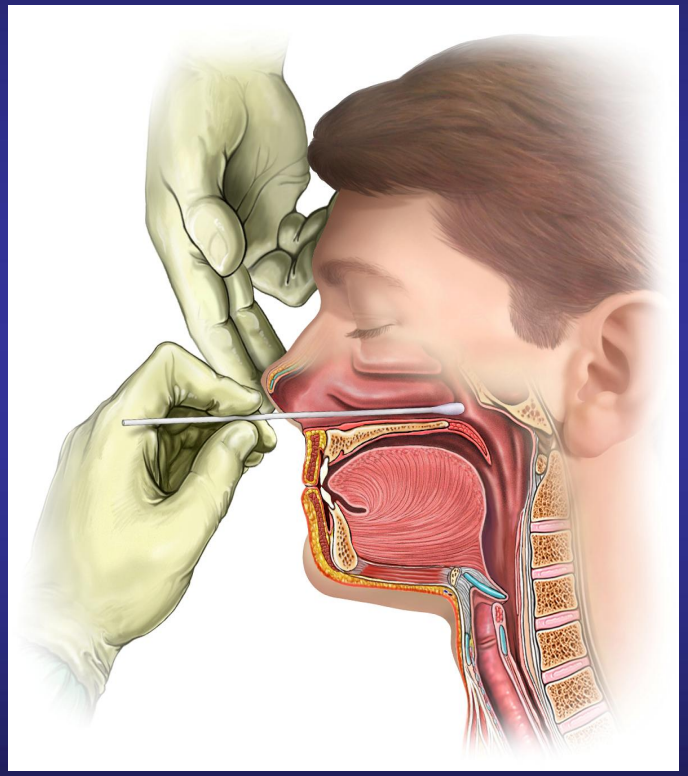


Reference:

1. Adapted from: Mortimer EA Jr. In: Katz SL, et al, eds. *Krugman's Infectious Diseases of Children.* 10th ed. 1998:335-349.

Diagnostic Tests for Pertussis

- Nasopharyngeal (NP) culture on special media (Regan-Lowe, Bordet-Gengou)
- Polymerase chain reaction (PCR)
- Serologic tests
- Increased white blood cell (WBC) count with absolute lymphocytosis
- Direct fluorescent antibody (DFA)—variable sensitivity/specificity



Tdap Booster Dose Vaccine For Adolescents

- Tetanus and diphtheria toxoids and acellular pertussis vaccine(Tdap). *(Minimum age: 10 years for BOOSTRIX® and 11 years for ADACEL®)*
- Administer at age 11 or 12 years for those who have completed the recommended childhood DTP/DTaP vaccination series and have not received a tetanus and diphtheria toxoid (Td) booster dose.
- Persons aged 13 through 18 years who have not received Tdap should receive a dose.
- A 5-year interval from the last Td dose is encouraged when Tdap is used as a booster dose; however, a shorter interval may be used if pertussis immunity is needed.

What Is HPV?

- HPV is the major cause cervical cancer [1]
- HPV is one of the most common sexually transmitted infections (STI) in the U.S.[1]
- ACIP & CDC recommends: all females age 11-12 should get the HPV Vaccine[2]
- Approved for females ages 9 through 26[2]
- By age 50, at least 80% of women will have acquired an HPV infection[2]

1. Bosch FX, Lorincz A, Muñoz N, Meijer CJLM, Shah KV. *J Clin Pathol*. 2002;55:244−265. 2. Centers for Disease Control and Prevention. Genital HPV Infection Fact Sheet. Rockville, Md: CDC National Prevention Information Network; 2004.
2. CDC accessed from http://www.cdc.gov/std/stats07/other.htm#HPV

Monitoring Adolescent Immunization Uptake using Immunization Information System

HPV Uptake Rates:

- USA: 25% of teens aged 13 to 17 received 1 of the 3 recommended HPV Vaccine since licensure in 2007[1] (n=2,947)

- Bexar: 14% (n= 12,394)[2]

1. CDC's Morbidity & Mortality Weekly-Vaccination Coverage Among Adolescents Aged 13--17 Years --- United States, 2007-October 10, 2008 / 57(40);1100-1103
2. Immunization Registry System (SAIRS) – database reflects a large subset of Bexar population

HPV Vaccine Uptake Detail Bexar County

Age	Total Females in SAIRS	Females with 1st dose	% with one dose
21	15,716	142	1%
20	15,794	308	2%
19	16,707	791	5%
18	17,093	1,481	9%
17	17,667	1,893	11%
16	18,081	2,365	13%
15	18,445	2,982	16%
14	18,154	2,577	14%
13	18,431	2,577	14%
12	19,062	2,330	12%
11	19,070	1,242	7%
Age 13 to 17	90,778	12,394	14%
Age 11 to 21	194,220	18,688	10%

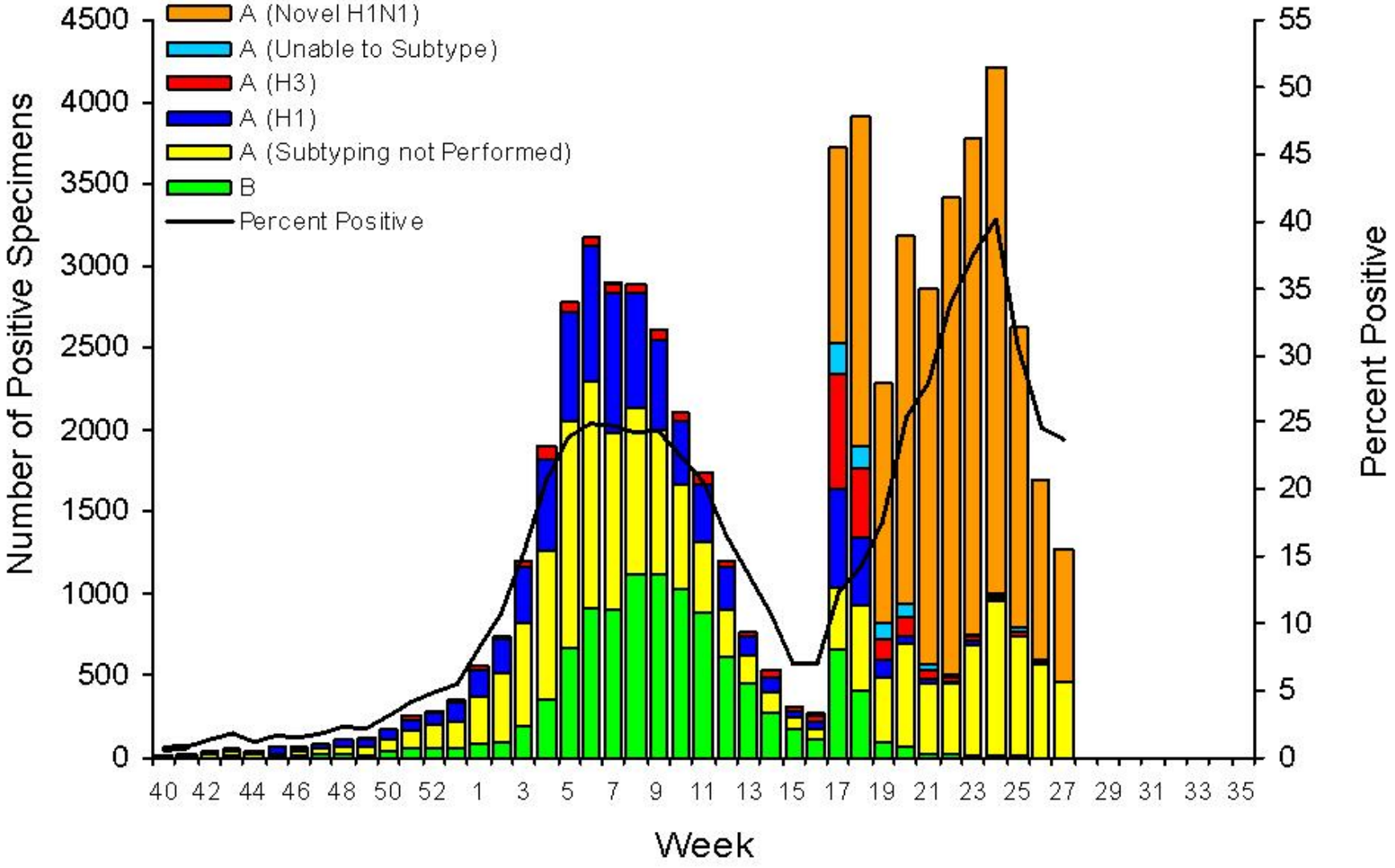
Immunization Registry System (SAIRS) – database reflects a large subset of Bexar population

Seasonal Influenza In Adolescents

- In 2008, CDC expanded its influenza recommendations to include annual immunization of all children 6 months to 18 years of age, children aged 6 months--8 years should receive 2 doses of vaccine if they have not been vaccinated previously
- Influenza vaccination has been recommended for adolescents with high-risk conditions for well over a decade
- Each year, between 20 and 40 percent of children and adolescents come down with the flu. For children with certain high-risk conditions, this can lead to severe illness, hospitalizations, and in some cases, even death.
- More adolescents, especially those with high-risk conditions, may be vaccinated if providers or parents don't first have to identify who meets criteria for vaccination, as under a risk-based approach." [1]

1. Pediatrics, October 2008, Volume 122, Issue 5
"Influenza Vaccination in Adolescents with High-Risk Conditions"
Mari M. Nakamura, MD(1) and Grace M. Lee, MD, MPH(2,3)

Influenza Positive Tests Reported to CDC by U.S. WHO/NREVSS Collaborating Laboratories, National Summary, 2008-09



HAVE YOU HEARD?

THERE ARE NEW SCHOOL REQUIREMENTS FOR 2009-2010

For Kindergarten

Varicella (chickenpox) – 2 doses

Hepatitis A – 2 doses

Measles, Mumps, Rubella (MMR) – 2 do

For 7TH Grade

Meningococcal (MCV4) – 1 d

Varicella (chickenpox) – 2 do

Tetanus, Diphtheria, Pertussis (Tda

Only if it has been five years (or 10 ye or 8th – 12th grade) since the last dose of tetanus-containing vaccine.

SAIRS
SAN ANTONIO IMMUNIZATION REGISTRY SYSTEM

Check with your child's doctor today!

METRO HEALTH
SAN ANTONIO'S PUBLIC HEALTH TEAM
IMMUNIZATION DIVISION

Questions ?

Fernando A. Guerra, M.D., M.P.H.
Director of Health
San Antonio Metropolitan Health District

http://www.sanantonio.gov/health/